SANAV MU-201

GPS/GPRS Nano Tracker

User Manual

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MU-201 User Documentation

Introduction

SANAV MU-201 is a more compact version of focusing on the pets or asset tracking market. Its location can be real time tracked through internet or specified terminals. The user can communicate with the service server through GPRS/GSM network, transfer alarms of Emergency, Geo-fencing., Remote Control, and Lower power, and record the tracking history stored in internal memory through USB or website.

This User Manual details the specification, hardware introduction, SMS commands and Tracker Status of MU-201. If you have any question about the operation of MU-201, please contact SANAV Customer Service **jacky.sun@sanav.com**.

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MU-201 Hardware General Introduction

Specification

GSM			
Frequency:	Quad-Band: 850/900/1800/1900MHz Compliant to GSM phase 2/2+ -Class 4 (2W @ 850/900MHz) -Class 1 (1W @ 1800/1900MHz)		
GPRS:	GPRS multi-slot class 10 GPRS mobile station class B		
RMS Phase Error:	≤5deg		
Max Out RF power:	33.0dBm±2dBm		
Dynamic Input Range:	-15 ~ -102 dBm		
Receiving Sensitivity:	Class II RBER≤2%（-102dBm）		
Stability Of Frequency:	Greater than 2.5ppm		
Max Frequency Error:	±0.1ppm		
GPS			
GPS Chipset:	UBX-G5010		
Receiver Type	50 Channels GPS L1 frequency, C/A Code GALILEO Open Service L1 frequency		
Sensitivity:	Tracking & Navigation -160 dBm Acquisition -160 dBm Cold Start (Autonomous) -145 dBm		
TTFF (Open Sky):	Cold start 40 s average	Warm start <30s	Hot start <2 s
User Interface			
Mini USB Connector:	Include charger		
Power Button:	Power on and power off.		
General			
Dimension:	60mm* 35 mm * 19mm		
Weight:	65 g		
Backup Battery:	Li-Polymer 650 mAh , 3.7V		
Standby Time:	10 minutes reporting: 50 Hours (estimation) 60 minutes reporting: 100 Hours (estimation)		
Charge Voltage	5 V DC		
Air Interface Protocol			
Transmit Protocol:	TCP,UDP,SMS		
Geo-Fence:	10 Geo-Fence regions can be defined.		
Low Power Alarm:	Alarm when battery is low		
Power On Report:	Report on power up		
Operating Environment			
Operating Temperature	0°C to +55°C		
Storage Temperature	-20°C to +85°C		

*This specification is subject to change without prior notice

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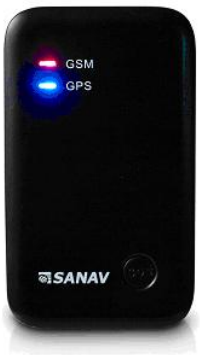
Package Contents

MU-201 x 1	Power Cord (USB Type) x 1
	
AC Adapter x 1 100～240V AC / 1.2A	**Utility CD x 1 (Manual& SW)**
Note: Connect Power Cord to AC Adapter to be a whole power charging solution.	

Optional Accessories

Utility AP Data Cable	Note the Difference!!!

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Front View

- **GSM LED (Red)**
- **GPS LED (Blue)**

SOS/Park Button

- **SOS -** Press and hold for 3s to trigger SOS Mode.
- **Exit from SOS -** In SOS Mode, press and hold for 3s again.
- **Park -** One Short Press to trigger Park Mode.
- **Exit from Park** – In Park mode, one short press again to exit Park Mode.

MU-201 LED Indication

Device Status		GSM		GPS	
		Red	Green	Red	Blue
Power ON Long Press Power key for 3s		Steady ON then following booting procedure (About 20s)		Steady ON then following booting procedure (About 20s)	
Power OFF Long Press Power key for 3s			Steady ON around 8s Than power off		Steady ON around 8s Than power off
GPS Status	GPS is not fixed	-	-	Flash/5s	-
	GPS is fixed	**-**	**-**	**-**	**Flash/5s**
	GPS sleeping mode	-	-	-	-
GSM Status	GSM NOT in Service	Flash/5s	-	-	-
	GSM in Service	**-**	**Flash/5s**	**-**	**-**
SOS Mode	In SOS Mode	Steady ON	-	Steady ON	-
Park Mode	Park Trigger on	-	-	Flash 5 times	
	Park state	-	Flash/5s	-	-
	Park Trigger off		-	-	Flash 5 times
Receive SMS Command		-	Flash 5 times	-	-
Low Power		Flash/1s	-		-
Battery Charging		-	-	-	Flash/1s
Battery Full Charged		-	Flash/1s	-	-
NO SIM or Invalid SIM ERROR (After Power On)		OFF	OFF	-	-

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Top View

Power button

Turn ON/OFF: Press and hold for more than 3 seconds.

ON: Both red LEDs steady ON

OFF: Both green& blue LEDs steady ON

Note: Please insert SIM card BEFORE turning ON the device.

Bottom View

Hidden Microphone

(For Overhearing)

Side View

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Insert SIM Card (Please note the SIM Card direction)

Note: Please make sure PIN Code function is disabled before inserting the SIM card.

Charging MU-201

Plug power cord into Mini USB socket for charging. (5V DC Input)

Charge the device for 2~3 hours for 1st time charging.

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Dimension

Weight: 65g

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Command Setup for MU-201

MU-201 currently provides SMS command and COTA (TCP) command for remote setup. User can setup the MU-201 by following the instructions shown in following chapters via SMS/COTA. Key the specific SMS message in your cellular phone and send it to the SIM number of MU-201. The setup messages are showed in the following sections.

1: The default setting:

Default ID is "username". Please read chapter **Change User Name** to desired ID.

Default password is "0000". Please read chapter **Change Password** to change the password.

There is no number in the default contact. Please read chapter **Set up Phone Book List** to add the number.

Default setting of Auto Report is deactivated. Please read chapter **Set up Auto Report by Time** to setup the regular auto report.

Default setting of APN is only suitable for Taiwan GSM network. Please read chapter **Set up APN for GPRS Service** to change the APN.

Default setting of URL is **http://www.sanavtw.com/uploadM1.php.** Please read chapter **Set up URL** to change the URL for http server setup.

Before doing any setup, please ensure the device is connected with the GSM network. The GSM LED must light on. And please note the device is not in SOS/Panic mode.

2: Please note that all the characters which include #, * and comma (,) should be **HALFWIDTH** form.

3: Please be aware of the upper (capital)/lower cases when entering the SMS command.

4: While entering any SMS command, note that **NO SPACE** is allowed between the characters, comma and signs in the SMS.

5: Any setup command must be started with a "#" sign and ended up with a "*" sign.

6: The comma (,) can be abbreviated if no further setup required for the command besides **Set up APN for GPRS Service.** Please refer to the examples of **Set up Auto Report.**

6: Add or not add the "+ "sign in front of the cellular phone number(s) are both acceptable, while the"+" sign should precede the international call prefixes. The specified international call prefix is required if "+ "sign is not added.

7: The device will update setting Only when the password, username and setup command are all correct.

If the command is not valid, a failure report is going to be sent to the user's cell phone.

8: Some PREPAID PHONE CARD SIM modules do not enable or even support GPRS service. Please consult with GSM carrier for further information.

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Change User Name

Generally, SMS command execution needs correct user name with password, or it will remain the same setting.

The SMS command default user name is "username". It can be changed by following the command format.

For example, entering the SMS command as the following allows user to change the user name from "username" to a new user name "jacky".

Only enter new command with new user name after it has been changed.

Setup Format: #「username」,「Password」,「Function Mode」,「New User Name」*

Command: #username,0000,1,jacky*

SMS/ COTA Command	Description
#	Start sign.
user name	Default ID of the device.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
1	Mode 1 defines user name setup mode.
jacky	✧ New user name changed by the user. ✧ At the maximum of 16 characters, including a~z,A~Z,0~9, @ - _ / .!%& ✧ **Please notice that you should notice if the letters is capitalized or in small letters when sending the command.**
*	End sign.

Table: User Name Change Format Description

Situation	Message Reply
Setup Succeeds	<OK>Username setup,V4.231;100%
Setup Fail	<FAIL>Username setup,V4.231;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.200;100%

Table: User Name Change Response Description

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Change Password

Generally, SMS command execution needs correct user name with password, or it will remain the same setting.

The SMS command default password is "0000". It can be changed by following the command format.

For example, entering the SMS command as the following allows user to change the password from "0000" to a new password "1111".

Only enter new command with new password after it has been changed.

Setup Format: #「username」,「Password」,「Function Mode」,「new Password」,「new Password」*

Command: #username,0000,2,1111,1111*

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
2	Mode 2 defines the password setup mode.
1111	New password (Please note at the maximum of 4 number)
1111	Reconfirm the password
*	End sign.

Table: Password Change Format Description

Situation	Message Reply
Setup Succeeds	<OK>Password setup,V4.239;100%
Setup Fail	<FAIL>Password setup,V4.239;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.200;100%

Table: Password Change Response Description

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Request IMEI Number

IMEI stands for International Mobile Equipment Identification, a unique number for identifying mobile devices validity in GSM network.

As above stated, each device has a unique IMEI number. Entering the command as the following allows user to check the IMEI number of the device for network registration and tracking.

Setup Format: #「username」,「Password」,「Function Mode」*

Command: #username,0000,imei*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
imei	Mode "imei" defines the device IMEI number request mode.
*	End sign.

Table: IMEI Number Request Format Description

Situation	Message Reply
Setup Succeeds	<OK>Read IMEI=357566000046804,V4.097;98%

Table: IMEI Number Request Response Description

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Set up APN for GPRS Service

Access Point Name (APN) is a protocol that typically allows a user's device to access the internet using the mobile phone network. It is a network identifier used by a mobile device when connecting to a GSM carrier. The carrier will then examine this identifier to determine what type of network connection should be created.

For uploading the data to a web server, a set of GPRS APN from your GSM network is required. Various GSM network provides different GPRS APN settings. Please ask your GMS carrier about the APN settings. If the user name and password of APN are indefinite or showed in blank, just leave the parameters empty (no space). User can follow the Setup Format below to setup the APN that is provided by your GSM carrier.

Setup Format: #「username」,「Password」,「Function Mode」,「APN name」,「APN username」,「APN password」,「APN DNS」*

Example1:#username,0000,3,twm,1234,1234, 172.20.2.10*

Example2:#username,0000,3,internet,,*

Note1: The total length of APN name, APN username, APN Password, and APN DNS should be less than 70 characteristics.

Note2: Some PREPAID PHONE CARD SIM modules do not enable or even support GPRS service. Please consult with GSM carrier for further information.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
3	Mode 3 defines the APN setup mode.
twm	APN Name
1234	APN user name (optional)
1234	APN Password (optional)
172.20.2.10	APN DNS (optional)
*	End sign.

Table: APN Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>GPRS APN setup,V4.195;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: APN Setup Response Description

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Set up Route for Data Transmission

This SMS command instructs the device decide to transmit GPS (GPRMC) positioning data to where in which protocol. Please confirm the back-end server protocol type and corresponded URL or IP address (with port number if required) before setup. There are 4 main protocols available for transmitting route setup:

1. HTTP: Hypertext Transfer Protocol. An internet browser based server protocol that usually has a specified URL (Uniform Resource Locator).
2. TCP/IP: Transmission Control Protocol. An OSI Transport layer protocol that has more complex frame structure, higher reliability but slower processing speed than UDP/IP.
3. UDP/IP: User Datagram Protocol. An OSI Transport layer protocol that has faster processing than TCP/IP but does not guarantee data delivery.
4. SMS: The DEVICE will send GPS data by SMS message format to Cellular phone.

User can choose the route to transmit the data by HTTP/TCP/UDP protocol individually or with SMS message as a backup route. Please refer to the following table for the route setup.

Setup Format: #「username」,「Password」,「Function Mode」,「0,2,4,6,7,8 or 9」*

Command: #username,0000,14,6*

SMS/ COTA Command	Description	
#	Start sign.	
Username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
14	Mode 14 defines Transmission Route mode.	
6	0	HTTP/SMS. Send data to HTTP server. If the route is not available, send data by SMS message instead.
	2	HTTP only. Send data to HTTP server. No SMS backup route.
	4	SMS only. Send data by SMS message to cell phone. No backup route.
	6	TCP/SMS. Send data to TCP server. If the route is not available, send data by SMS message instead.
	7	TCP Only. Send data to TCP server. No SMS backup route.
	8	UDP/SMS. Send data to UDP server. If the route is not available, send data by SMS message instead.
	9	UDP Only. Send data to UDP server. No SMS backup route.
*	End sign.	

Table: Transmission Route Setup Format Description

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Situation	Message Reply
Setup Succeeds	<OK>Route is HTTP/SMS mode, V3.793;56%
	<OK>Route is HTTP mode, V3.793;56%
	<OK>Route is SMS mode, V3.793;56%
	<OK>Route is TCP/SMS mode, V3.793;56%
	<OK>Route is TCP mode, V3.793;56%
	<OK>Route is UDP/SMS mode, V3.793;56%
	<OK>Route is UDP mode, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%
	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Transmission Route Setup Response Description

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Set up URL

This SMS command instructs the device to transmit GPS (GPRMC) positioning data to a specified URL (Uniform Resource Locator) or IP address of HTTP protocol server for real time GPS tracking.

Entering the SMS command as the following allows user to changes the address to "http://www.sanavtw.com/uploadM1.php". The address will be assigned to receive the GPS data sent by the device.

Setup Format: #「username」,「Password」,「Function Mode」,「URL」*

Command: #username,0000,4, http://www.sanavtw.com/uploadM1.php*

Note: The URL should be less than 80 characteristics.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
4	Mode 4 defines the URL setup mode.
http://www.sanavtw.com/uploadM1.php	URL of the HTTP server.
*	End sign.

Table: URL or IP Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>IP/Domain setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: URL or IP Setup Response Description

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Set up TCP/UDP Server Address

User can use IP address setup command to indicate the device transmit GPS (GPRMC) positioning data to a specified TCP or UDP protocol based server for real time tracking.

Entering the SMS command as the following allows user to change the address to specified IP and port. The IP address will be assigned to receive the GPS data sent by the device.

Setup Format: #「username」,「Password」,「Function Mode」, 「TCP/UDP server address」*

Command: #username,0000,18,220.128.123.1:7878 *

Or #username,0000,18,icare-u.com.tw:12345*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
18	Mode 18 defines the TCP/UDP Server Address setup mode.
220.128.123.1:7878	TCP/UDP Server Address and Port / Domain name
*	End sign.

Table: Server Address Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>TCP/UDP URL setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Server Address Setup Response Description

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Set up Phone Book List

There are three main purposes of Phone Book List setup:

1. Backup Route: As a backup route when the data is not able to send to the server. The data will be sent to 1st cellular number **PH-01** only.

2. SOS Alarm Route: When the device is in SOS mode, it will send SOS event report to the phone numbers in the list.

3. SMS Data Route: When the data route is set to SMS, the device will send GPRMC data to to 1st cellular number **PH-01** only.

Use this SMS command to set up the cellular phone book (Max. of 3 numbers) as the following format:

Setup Format: #「username」,「Password」,「Function Mode」,「PH-01」,「PH-02」,「PH-03」*

Command: #username,0000,5,+886123456789,+492234567890,+866323456789*

Note1: Add or not add the "+ "sign in front of the cellular phone numbers are both acceptable, while the"+" sign should precede the international call prefixes.

Note2: When the Phone Book is set and Security Phone Book is enabled, the numbers will be considered as security numbers. Only the security numbers are allowed to do the command setting and overhearing (answer call) from the device.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
5	Mode 5 defines the Phone Book List setup mode.
+886123456789	1st cellular numbers, **PH-01**
+492234567890	2nd cellular numbers, **PH-02**
+866323456789	3rd cellular numbers, **PH-03**
*	End sign.

Table: Phone Book List Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>;P1=0935304180;P2=;P3=, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Phone Number List Setup Response Description

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Set up Security Phone Book List

Security Phone Number list allows limited administrators to manage and change the settings of the device. When the Security Phone Numbers are set, even the User Name and Password are correct, if the setup number is not matched with the list, the setup or any change will be invalid.

By the way, only the administrators of the list are allowed to call the device for real time communication when the Security Phone Numbers are set.

Maximum 10 sets of numbers are available.

Setup Format: #「username」,「Password」,「Function Mode」,「1~10」,「Phone number」*

Command: #username,0000,secphone,1,+886123456789*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
Secphone	Mode "secphone" defines the Security Phone Book setup mode.
1	The ID of each phone number. User can put 1~10 here
+886123456789	The Security Phone number you would like to assign to the ID.
*	End sign.

Table: Security Phone Number Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Sec phone(1)=0916004972,V4.112;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Security Phone Number Setup Response Description

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Enable Security Phone Book

User can use this command to enable/disable Security Numbers Functions.

Setup Format: #「username」,「Password」,「Function Mode」,「on/off」*

Command: #username,0000,security,on*

Note: The numbers preset in "SOS Phone" and "Phone Book" are also considered as Security Phone number once this function is enabled.

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
security	Mode "security" defines the enable Security Phone Number mode.	
on/off	on	Only accept calls/commands by security number.
	off	Accept all the calls/commands.
*	End sign.	

Table: Enable Security Phone Number Format Description

Situation	Message Reply
Setup Succeeds	<OK>Security ON!,V4.112;100% <OK>Security OFF!,V4.112;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Enable Security Phone Number Response Description

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Set up Answer Call Mode

User can use Answer Call (Voice Mode) command to define the response when MU-201 is receiving an incoming call. The device can answer the call automatically or hang up the call and send current location message.

Setup Format: #「username」,「Password」,「Function Mode」,「0~3」*

Command: #username,0000,8,1*

Note: If user has enabled "Security Phone Book" function, MU-201 will verify whether the caller's number is in the Security Phone Book. If not, MU-201 will not react to the incoming call.

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
8	Mode 8 defines the Voice Mode setup.	
1	0 /1	The device will answer the incoming call automatically.
	2	The device will hang up the call and respond its current location to caller's cell phone.
	3	The device will hang up the call and respond its current location to the defined route.
*	End sign.	

Table: Answer Call Mode Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Monitor mode 0/1;auto answer call, V3.793;56% <OK>Monitor mode 2;reply to caller V3.793;56% <OK>Monitor mode 3;reply by router,V4.156;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Answer Call Mode Setup Response Description

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Set up SOS Phone Book

Use this SMS/COTA command to define the SOS cellular number by following the format below. The device will first send 1 SOS event/alarm report to all number in the phone book and then make a phone call to the SOS phone number immediately.

Setup Format: #「username」,「Password」,「Function Mode」,「SOS Phone」*

Command: #username,0000,sosphone,+886123456789*

Note: Add or not add the "+ "sign in front of the cellular phone number(s) are both acceptable, while the"+" sign should precede the international call prefixes.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
sosphone	Mode "sosphone" defines the SOS Phone Book setup mode.
+886123456789	SOS Phone number
*	End sign.

Table: SOS Phone Book Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>SOS phone=0935304180, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: SOS Phone Book Setup Response Description

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Set up SOS Event Report Interval

Use this SMS/COTA command to predefine the SOS report interval by following the format below.

Setup Format: #「username」,「Password」,「Function Mode」,「SOS report interval」,「Total number of SOS reports」*

Command: #username,0000,15,30,3*

Note: SOS report interval ranges from 1~65000 seconds; SOS report times ranges from 1~9999 times.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
15	Mode 15 defines the SOS Report Interval setup mode.
30	It defines the report interval (in this case, one report per 30s) when SOS is triggered.
3	It defines how many times the SOS report will be sent to the assigned route. (in this case, 3 times)
*	End sign.

Table: SOS Alarm Report Interval Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Panic setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: SOS Alarm Report Interval Setup Response Description

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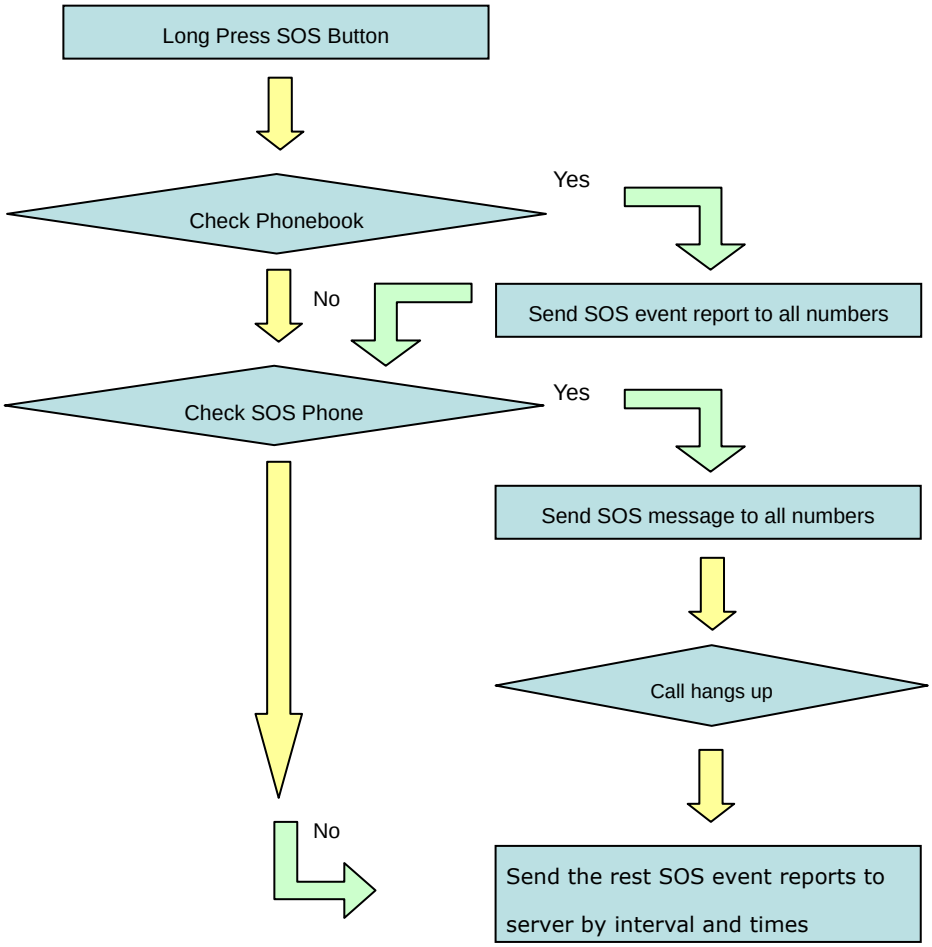
SOS Event Report Flow



SOS Event Report Flow Description

1. SOS mode: Long press power button to more than 3s, the SOS function will be triggered with "beep" sound.
2. Send 1 SOS event/alarm report to all number in the phone book if the phone book number is set. Please refer to **Set up Phone Book List**.
3. Calls SOS phone number if this number is set in the SOS phone book. Please refer to **Set up SOS Phone Book**.
   3.1 User can finish the call anytime without limitation.
   3.2 Send the rest SOS event reports to the server by report interval and times after the call is finished.
4. For SOS event report interval and times setup, please refer to **Set up SOS Event Report Interval**.

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Stop SOS Report (Exit from SOS Mode)

While the device is in SOS Mode, user can use this SMS/COTA command to stop the SOS report and Exit from SOS mode.

Setup Format: #「username」,「Password」,「offpanic」*

Command: #username,0000,offpanic*

Note: User can exit SOS Mode by long pressing the SOS button again. Please refer to **Hardware General Introduction**.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
offpanic	Mode offpanic defines the SOS Exit mode.
*	End sign.

Table: Exit from SOS Mode Setup Description

Situation	Message Reply
Setup Succeeds	<OK>Panic OFF to normal mode, V3.793;56%

Table: Exit from SOS Mode Response Description

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Set up Auto Report

Generally, the device will generate GPS (GPRMC) data and report to server, specified cellular phone or network routes. Auto Report setup can enable the device report GPS data automatically during a period of time.

Use this command to set up the frequency of Auto Report. The device can report according to time interval. If you send the SMS command as the following example, the device will send a report every 5 minutes (300 seconds) and the total number of reports is 99.

Setup Format: #「User Name」,「Password」,「Function Mode」,「Intervals (sec.)」,「Total number of reports」,,, [Time Unit(s/m/h)]*

Example1:#username,0000,6,300,99*

Example2:#username,0000,6,300,99,,,s*

Note: The report times of Auto Reports can be set by entering the digits from 1 to 9998 in the「total number of reports」field. When 9999 is entered, the device will generate unlimited Auto Reports, when 0 is entered, the device will stop/disable Auto Report.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default user name of the device. ✧ If you have changed the username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
6	Mode 6 defines Auto Report setup mode.
300	Time Interval (period) of Auto Report.
99	Times (frequency) of Auto Reports that will be sent automatically.
s	Time Unit as **"s"** for seconds (default), **"m"** for minutes, and **"h"** for hours. In this example, we put "300" in constant interval of sending data and blank for the Time Unit, so the actual report will be 300 seconds.
*	End sign.

Table: Auto Report Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Auto setup,V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Auto Report Setup Response Description

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Auto Report by Distance

The GPS (GPRMC) data can report to server or cellular phone automatically during a period of time or during a distance of travel.

Use this command to set up the distance Auto Report. The device will report only when both time interval and distance traveled are matched. If you send the SMS command as the following example, the device will check the distance traveled every 5 minutes (300 seconds) with previous GPS data, the device will send Auto Report if the distance exceeds 100m from last known position, or it will not send report if the distance does not exceed 100m, it will check the distance again at the next 5 minute time interval. The total number of reports times is 99.

Setup Format: #「User Name」,「Password」,「Function Mode」,「Intervals (sec.)」,「Total number of reports」, 「Distance Interval(m)」,,[Time Unit(s/m/h)]*

Command: #username,0000,6,300,99,100*

NOTE: When the "Distance" interval or "Stationary Detection" is set, the tracker status (event) will be "AGF" instead of "AUTO".

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default user name of the device. ✧ If you have changed the username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
6	Mode 6 defines Auto Report setup mode.
300	Time Interval (period) of Auto Report.
99	Times (frequency) of Auto Reports that will be sent automatically.
100	**Distance Interval**: when the auto report function is activated, the tracker will take the current position as the start. If this value is defined, when the tracker exceeds the distance traveled during a time of period, the event report will be sent to the assigned route. The unit of this function is **meter**. The minimum distance setting is 100m.
s	Time Unit as **"s"** for seconds (default), **"m"** for minutes, and **"h"** for hours.
*	End sign.

Table: Auto Report by Distance Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>**AGF** setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Auto Report by Distance Setup Response Description

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Auto Report by Stationary Times

The GPS (GPRMC) data can report to server or cellular phone automatically during a period of time or during a distance of travel or by stationary (vehicle stop/park status) times.

Use this command to set up the stationary detection times of Auto Report, the device will report 2 types of Auto Reports: Distance Auto Reports and Stationary Auto Reports. If you send the SMS command as the following example, the device will check the distance traveled every 5 minutes when vehicle is moving, and check the stationary status every 5 minutes (300 seconds) when vehicle is stopped. The device will send Auto Report if the device detected continuously 10 times stationary status, so the actual Auto Report interval will be 5 minutes x 10 =50 minutes (it means the device will send stationary Auto Report every 50 minutes). The device will not send report if the device detected stationary status fewer than 10 times or non-continuity 10 times stationary status. The total number of reports times is 99.

Setup Format: #「User Name」,「Password」,「Function Mode」,「Intervals (sec)」,「Total number of reports」,「Distance Interval(m)」,「stationary Detection(times)」, [Time Unit(s/m/h)]*

Command: #username,0000,6,300,99,100,10,s*

NOTE: When the "Distance" interval or "Stationary Detection" is set, the tracker status (event) will be "AGF" instead of "AUTO".

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default user name of the device. ✧ If you have changed the username, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
6	Mode 6 defines Auto Report setup mode.
300	Time Interval (period) of Auto Report.
99	Times (frequency) of Auto Reports that will be sent automatically.
100	**Distance Interval**: when the auto report function is activated, the tracker will take the current position as the start. If this value is defined, when the tracker exceeds the distance traveled during a time of period, the event report will be sent to the assigned route. The unit of this function is **meter**. The minimum distance setting is 100m.
10	**Stationary Detection**: If this value is defined by 5, the tracker will detect if the tracker exceeds the circle for 5 times. If the tracker doesn't exceed this circle, the tracker will send a notice command. The unit is **times**.
s	Time Unit as **"s"** for seconds (default), **"m"** for minutes, and **"h"** for hours. In this example, we put "300" in constant interval and "s" for the Time Unit, so the actual report will be 300 seconds.
*	End sign.

Table: Auto Report by Stationary Setup Format Description

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Situation	Message Reply
Setup Succeeds	<OK>**AGF** setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Auto Report by Stationary Setup Response Description

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Current Position Polling

The user can send the SMS command according to the example shown below to have the device send GPS data right away (SMS Polling). It will transmit current GPS data to the **USER'S CELL PHONE NUMBER** at once. While the route is set to SMS mode, it will transmit current data to your cell phone that you sent the SMS Polling command to the device.

Setup Format: #「username」,「Password」,「Function Mode」*

Command: #username,0000,10*

Note: For Google hyper-link setting, please refer to **Set up SMS Google Map Report**.

SMS/ COTA Command	Description
#	Start sign.
user name	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
10	Mode 10 defines the SMS Polling setup mode.
*	End sign.

Table: SMS Polling Setup Format Description

Situation	Message Reply
Setup Succeeds	username,$GPRMC,062032.00,A,2457.80696,N,12125.52737,E,0.344,26.82,090211,,,A*59,POLL, V3.793;56%
Setup Succeeds Google hyper-link	username,http://maps.google.com/maps?q=24.963528,121.425658(tracker)&,POLL, V3.793;56%

Table: SMS Polling Setup Response Description

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Set up Polling Format

The user can send the SMS/COTA polling according to the shown example to get desired information. It defines the report format when you set SMS polling.

Setup Format: #「username」,「Password」,「Function Mode」, 「Report Format Code」*

Command: #username,0000,10,2*

SMS/ COTA Command	Description	
#	Start sign.	
user name	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
10	Mode 10 defines the SMS Polling setup mode.	
2	Report Format Code:	
	2	Google Map Hyperlink
	4	Actual Address (show the nearest address from Google database)
	6	To include both Google Map Hyperlink and Actual Address
*	End sign.	

Table: Polling Format Setup Description

Situation	Message Reply
Setup Succeeds Google hyper-link	username,http://maps.google.com/maps?q=24.963528,121.425658(tracker)&,POLL, V3.793;56%
Setup Succeeds Actual address	No. 36, Zhongshan Rd., Tucheng District, New Taipei City, Taiwan 236

Table: Polling Setup Response Description

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Google MAP Report with Address

Use this command to define the SMS report format when route is set at 4. SMS, or **Answer Call Mode** is set at "2" or "3". There are 2 modes: 1) GPRMC Format and 2) SMS Google Map Format.

With SMS Google Map Format, the device will send the device location in Google Map hyper-link. It can be shown on the mobile browser which supports Google Map display (GPRS/3G required).

User also can use this command to have the device send location address information which corresponds to the nearest position of the device.

The Google Map hyper-link and address information can be set both available or individually. There will be 2 separate messages sent to the caller's cell phone if both Google Map hyper-link and address are enabled, one is Google Map hyper-link sentence and the other is address sentence.

Setup Format: #「username」,「Password」,「Function Mode」, 「on/off」*

Command: #username,0000,google,3*

Google Map hyper-link sentence example:

http://maps.google.com/maps?q=24.963544,121.425648(tracker)&,AUTO, V3.793;56%

Original GPRMC Format sentence example:

username,$GPRMC,052720.00,A,2457.48758,N,12125.32333,E,1.015,128.84,100312,,,A*66,AUTO,V3.793;56%

Address message sentence example:

No.36, Zhongshan Rd, Tucheng District, Xinbei, Taiwan 236

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of MU-58. If you have changed the Username, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
google	Mode "google" defines the Google Map Address setup mode.	
3	0	google hyper-link OFF; addr OFF
	1	google hyper-link ON; addr OFF
	2	google hyper-link OFF; addr ON
	3	google hyper-link ON; addr ON
*	End sign.	

Table: Google Map Address Setup Format Description

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Situation	Message Reply
Setup Succeeds	<OK>google hyper-link OFF; addr OFF,V4.022;88% <OK>google hyper-link ON; addr OFF,V4.022;88% <OK>google hyper-link OFF; addr ON,V4.097;99% <OK>google hyper-link ON; addr ON,V4.096;99%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V4.133;100%

Table: Google Map Address Setup Response Description

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Set up Address Language

The user can change the SMS polling address language by setting language codes.

The default address language is in en-us (English United States), the user can send the following command to define the report in another language:

Setup Format: #「username」,「Password」,「Function Mode」,「Report Format Code」*

Command: #hl,zh-tw*

Note: Some language codes might be not available, the actual supported codes relies on map service provider.

SMS/ COTA Command	Description
#	Start sign.
hl	Mode "hl" defines the SMS Polling Address setup mode.
zh-tw	The language code, such as: en-us, zh-tw,ar-ae…etc.
*	End sign.

Table: Address Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>google hl=zh-tw,V4.133;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V4.133;100%

Table: Address Setup Response Description

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Language Codes Reference Table

Code	Country/Region	Code	Country/Region
af	Afrikaans	sq	Albanian
ar-sa	Arabic (Saudi Arabia)	ar-iq	Arabic (Iraq)
ar-eg	Arabic (Egypt)	ar-ly	Arabic (Libya)
ar-dz	Arabic (Algeria)	ar-ma	Arabic (Morocco)
ar-tn	Arabic (Tunisia)	ar-om	Arabic (Oman)
ar-ye	Arabic (Yemen)	ar-sy	Arabic (Syria)
ar-jo	Arabic (Jordan)	ar-lb	Arabic (Lebanon)
ar-kw	Arabic (Kuwait)	ar-ae	Arabic (U.A.E.)
ar-bh	Arabic (Bahrain)	ar-qa	Arabic (Qatar)
eu	Basque	bg	Bulgarian
be	Belarusian	ca	Catalan
zh-tw	Chinese (Taiwan)	zh-cn	Chinese (PRC)
zh-hk	Chinese (Hong Kong SAR)	zh-sg	Chinese (Singapore)
hr	Croatian	cs	Czech
da	Danish	nl	Dutch (Standard)
nl-be	Dutch (Belgium)	en	English
en-us	**English (United States)**	en-gb	English (United Kingdom)
en-au	English (Australia)	en-ca	English (Canada)
en-nz	English (New Zealand)	en-ie	English (Ireland)
en-za	English (South Africa)	en-jm	English (Jamaica)
en	English (Caribbean)	en-bz	English (Belize)
en-tt	English (Trinidad)	et	Estonian
fo	Faeroese	fa	Farsi
fi	Finnish	fr	French (Standard)
fr-be	French (Belgium)	fr-ca	French (Canada)
fr-ch	French (Switzerland)	fr-lu	French (Luxembourg)
gd	Gaelic (Scotland)	ga	Irish
de	German (Standard)	de-ch	German (Switzerland)
de-at	German (Austria)	de-lu	German (Luxembourg)
de-li	German (Liechtenstein)	el	Greek
he	Hebrew	hi	Hindi
hu	Hungarian	is	Icelandic
id	Indonesian	it	Italian (Standard)
it-ch	Italian (Switzerland)	ja	Japanese
ko	Korean	ko	Korean (Johab)

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Code	Country/Region	Code	Country/Region
lv	Latvian	lt	Lithuanian
mk	Macedonian (FYROM)	ms	Malaysian
mt	Maltese	no	Norwegian (Bokmal)
no	Norwegian (Nynorsk)	pl	Polish
pt-br	Portuguese (Brazil)	pt	Portuguese (Portugal)
rm	Rhaeto-Romanic	ro	Romanian
ro-mo	Romanian (Republic of Moldova)	ru	Russian
ru-mo	Russian (Republic of Moldova)	sz	Sami (Lappish)
sr	Serbian (Cyrillic)	sr	Serbian (Latin)
sk	Slovak	sl	Slovenian
sb	Sorbian	es	Spanish (Spain)
es-mx	Spanish (Mexico)	es-gt	Spanish (Guatemala)
es-cr	Spanish (Costa Rica)	es-pa	Spanish (Panama)
es-do	Spanish (Dominican Republic)	es-ve	Spanish (Venezuela)
es-co	Spanish (Colombia)	es-pe	Spanish (Peru)
es-ar	Spanish (Argentina)	es-ec	Spanish (Ecuador)
es-cl	Spanish (Chile)	es-uy	Spanish (Uruguay)
es-py	Spanish (Paraguay)	es-bo	Spanish (Bolivia)
es-sv	Spanish (El Salvador)	es-hn	Spanish (Honduras)
es-ni	Spanish (Nicaragua)	es-pr	Spanish (Puerto Rico)
sx	Sutu	sv	Swedish
sv-fi	Swedish (Finland)	th	Thai
ts	Tsonga	tn	Tswana
tr	Turkish	uk	Ukrainian
ur	Urdu	ve	Venda
vi	Vietnamese	xh	Xhosa
ji	Yiddish	zu	Zulu

Source link: **http://msdn.microsoft.com/en-us/library/ms533052(v=vs.85).aspx**

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Set up Park/Move

The user can set this command or press SOS button shortly to enable and disable the Park function. When Park is enabled, Auto Report will be pending until MOVE event is triggered.

If the device senses movement (MOVE), it will send MOVE reports to the assigned route by interval and times. Park mode will be disabled and Auto Report will be recovered once all MOVE reports are sent.

Setup Format: #「username」,「Password」,「Function Mode」, [on/off]*

Command: #username,0000,park,on*

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
park	Mode "park" defines the Park setup mode.	
on	on	Activate Park function
	off	Deactivate Park function
*	End sign.	

Table: Park Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>PARK ON, V3.793;56%
	<OK>PARK OFF, V3.793;56%
Emergency Mode	in emergency, Park mode cannot be activated.,3.833V

Table: Park Setup Response Description

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Set up Move Interval

When the park function is activated, user can use this command to set up MOVE report interval (period) and times (frequency).

Setup Format: #「username」,「Password」,「Function Mode」,「intervals (sec)」,「Total number of report」*

Command: #username,0000,16,60,3*

Note: This is for "conditions setting" only, please send #username,0000,PARK,ON* to activate the function.

SMS/ COTA Command	Description
#	Start sign.
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.
16	Mode 16 defines the Move Interval setup mode.
60	Interval (period) of MOVE Report. : Maximum 65000 seconds
3	Total number of MOVE reports : 1-9998 times; 9999 is infinite
*	End sign.

Table: Park Interval Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Move setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Park Interval Setup Response Description

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Set up Vibration

Vibration sensor is embedded in the device. User can use following commands to enable vibration detection.

If the Vibration is set, the GPS module of the device will be in power save mode when the device stops moving for more than 3 minutes.

Since the device is in vibration detection mode, it will always send the same longitude/latitude coordinates GPRMC data, thus the GPS module consumes no power to obtain data from the satellites, and the device operation time will be extended.

Setup Format: #「username」,「Password」,「Function Mode」,「on/off」*

Command: #username,0000,vs,on*

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
vs	Mode 'vs' defines Vibration setup mode.	
on	on	Enable the vibration.
	off	Disable the vibration.
*	End sign.	

Table: Vibration Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>VS ON,V3.937;76%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V3.937;76%

Table: Vibration Setup Response Description

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Show Vibration Status

User can set Vibration Status function to SHOW or HIDE Vibration Status event when triggering the detection.

When the Vibration Status function is set to SHOW, the general Vibration Status events are shown as the following:

The device is moved:

imei=357248014534899&rmc=$GPRMC,032459.00,V,2457.81052,N,12125.53545,E,0.073,,200411,,,A*61,**MOVE**, V3.793;56%

The device is stopped:

imei=357248014534899&rmc=$GPRMC,032459.00,V,2457.81052,N,12125.53545,E,0.073,,200411,,,A*61,**STOP**, V3.793;56%

When the Vibration Status function is set to HIDE, when the detection is triggered, the Vibration Status events shown above will NOT be displayed.

Setup Format: #「username」,「Password」,「Function Mode」,「on/off」,「show/hide」*

Command: #username,0000,vs,on,show*

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
vs	Mode 'vs' defines Vibration setup mode.	
on	on	Enable the vibration.
	off	Disable the vibration.
show	show	Enable Vibration Status events report.
	hide	Disable Vibration Status events report.
*	End sign.	

Table: Vibration Event Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>VS ON;VS SHOW,V3.937;76%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V3.937;76%

Table: Vibration Event Setup Response Description

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Vibration Sensitivity

User can define the sensitivity of Vibration by setting the following SMS/COTA command. There are 3 steps to define the sensitivity from most sensitive to least sensitive.

Setup Format: #「username」,「Password」,「Function Mode」,「on/off」,「show/hide」,「write」,「Sensitivity」, 「Stop Detection Buffer Time」*

Command: #username,0000,vs,on,show,write,1,180*

SMS/ COTA Command	Description	
#	Start sign.	
username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
vs	Mode 'vs' defines Vibration setup mode.	
on	on	Enable the vibration.
	off	Disable the vibration.
show	show	Enable Vibration Status events report.
	hide	Disable Vibration Status events report.
write	The write command for sensitivity setting.	
1	Sensitivity Level:	
	1	Most vibration sensitivity
	2	Less vibration sensitivity
	3	Least vibration sensitivity
180	To define if the device stops for how long will be counted as "stop". There are 60/120/180/240/300 second steps setting.	
*	End sign.	

Table: Vibration Sensitivity Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>VS Write;VS SHOW,V3.937;76%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V3.937;76%

Table: Vibration Sensitivity Setup Response Description

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Set up Over Speed

GPS receivers calculate the speed using algorithms in the Kalman filter. Most receivers compute speed by a combination of movement per unit time and computing the Doppler shift in the pseudo range signals from the satellites.

MU-201 provides Over Speed Detection. It will send an Over Speed report when GPS module calculates the speed value is greater then the defined speed limit.

Over Speed function consumes more power since the GPS module calculates the speed all the time once the Over Speed function is enabled.

Setup Format: #「username」,「Password」,「Function Mode」, 「on/off」*

Command: #username,0000,speed,on*

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
speed	Mode "speed" defines the Overspeed activation setup mode.	
on	on	Enable Speed Detection;
	off	Disable Speed Detection
*	End sign	

Table: Over Speed Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Speed detect is ON,V4.188;100%
	<OK>Speed detect is OFF,V4.152;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Over Speed Setup Response Description

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Set up Over Speed Interval

Use this command to set up the Over Speed threshold and interval. Once the Over Speed detection is enabled, the device will start to report according speed limit, interval and times.

MU-201 provides Over Speed Detection. User can also set up detection time for misreporting.

Setup Format: #「username」,「Password」,「Function Mode」,「Speed Limit」,「Unit」,「Interval(Sec.)」,「Total number of reports」,「Detection Times」*

Command: #username,0000,11,100,km,10,3,5*

Note1: With the above setting, the device will send Over Speed Alarm at every 10~15 second (it will be more than 10 since there is some delay in detection) when it goes over 100km/hr.

Note2: This is for "conditions setting" only, please send #username,0000,speed,on* to activate the function.

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
11	Mode 11 defines the Overspeed setup mode.	
100	Speed Limit threshold. Range: 1~999.	
km	Speed Unit per hour. There are 3 speed units for calculation:	
	km	kilometer/hr
	mi	miles/hr
	nm	nautical miles/hr
10	Time Interval (period) of Over Speed Report.	
3	Times (frequency) of Over Speed Reports that will be sent automatically.	
5	Detection times x 3s. In this case, the device reports Over Speed if it detects continuous 5 times x 3s=15 seconds Over Speed events.	
*	End sign	

Table: Over Speed Interval Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Speed limit setup, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Over Speed Interval Response Description

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Set up Geo-Fence Coordinates

A Geo-Fence is a virtual perimeter for a real-world geographic area.

Geo-Fencing is a term utilized primarily in the corporations that refers to the practice of limiting mobile employees to a specific geographic location by tracking their whereabouts via the GPS. The purpose of geo-Fencing is to ensure a company's mobile employees travel locally or drive company vehicles as part of their job, stay within the boundaries the company deems productive. It is essentially another way for large corporations and businesses to monitor their employees' actions at work.

User can set up the Geo-Fence coordinates by entering SMS command below. The Geo-Fence coordinates (gf1~gf10) are defined as a circular area. Therefore, the coordinate is the center and the radius is defined in meter.

There are totally 10 groups of Geo-Fence coordinates can be set and saved.

Setup Format: #「username」,「Password」,「gf1~10」, 「Latitude」,「N/S」, 「Longitude」, 「E/W」, 「Radius」,「GF Function Mode」*

Command: #username,0000,gf1,2458.9741,N,12125.6460,E,500,1*

#username,0000,gf1,1* (Enable Geo-Fence detection if the coordinates are predefined)

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
gf1	Mode "gf (1~10)" defines the Geo-Fence (1~10) setup mode.	
2458.97411	Latitude (unit:ddmm.mmmmm)	
N	N = Northern, S = Southern	
12125.64601	Longitude (unit:dddmm.mmmmm)	
E	E= Eastern , W= Western	
500	500 meters in radius. Minimum recommended radius: 100 meters.	
1	0	Disable the Geo-Fence Detection.
	1	Enable and trigger the event when the tracker is outside of the Geo-Fence.
	2	Enable and trigger the event when the tracker is inside of the Geo-Fence.
	3	Enable and trigger the event when the tracker is either outside or inside of the Geo-Fence.
*	End sign.	

Table: Geo-Fence Coordinate Setup Format Description

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Situation	Response
Success	<OK>GF ONgf1 SETUP,V4.172;100%
	<OK>GF OFFgf1 SETUP,V4.172;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.172;100%

Table: Geo-Fence Coordinates Setup Response Description

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Enable Geo-Fence

User can enable or disable the Geo-Fence detection by this short command without inputting longitude and latitude if the coordinates are predefined.

Setup Format: #「username」,「Password」,「Function Mode」,「Parameter」*

Command: #username,0000,gf1,1*

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
gf1	Mode "gfx" defines the Geo-Fence setup mode. User can input gf1, gf2, gf3, gf4…gf10 to define each Geo-Fence range. There are 10 sets of Geo-Fence can be predefined.	
1	0	It will disable the Geo-Fence detection.
	1	It will trigger the event when the tracker is outside of the Geo-Fence.
	2	It will trigger the event when the tracker is inside of the Geo-Fence.
	3	It will trigger the event when the tracker is either outside or inside of the Geo-Fence.
*	End sign.	

Table: Geo-Fence Coordinate Enable Format Description

Situation	Message Reply
Setup Succeeds	<OK>GF ONgf1 SETUP, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Geo-Fence Coordinate Enable Response Description

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If the user likes to enable all the 10 sets of Geo-Fence coordinates at once, it can be done by entering the following SMS/COTA command:

Setup Format: #「username」,「Password」,「Function Mode」*

Command: #username,0000,gf,on*

SMS/ COTA Command	Description	
#	Start sign.	
username	✧ Default ID of the device. ✧ If you have changed the user name, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
gf	Mode "gf" defines the Geo-Fence setup mode.	
on	on	To enable Geo-Fence function (all 10 sets)
	off	To disable Geo-Fence function (all 10 sets)
	read	To read Geo-Fence GF function code (all 10 sets)
	clear	To clear Geo-Fence coordinates and function setting (all 10 sets)
*	End sign.	

Table: All Geo-Fence Coordinate Enable Format Description

Situation	Message Reply
Setup Succeeds	<OK>GF ON, V3.793;56% <OK>GF OFF, V3.793;56% <OK>I60;T3;M0;G1=3;G2=0;G3=0;G4=0;G5=0;G6=0;G7=0;G8=0;G9=0;G10=0,V3.793;56% <OK>GF CLEAR, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: All Geo-Fence Coordinate Enable Response Description

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Set up Geo-Fence Event Report Interval

User can use this command to define the Geo-Fence Report interval (period) and times (frequency). The command is applied to all the 10 Geo-Fence coordinate sets.

Setup Format: #「username」,「Password」,「Function Mode」,「Intervals (sec.)」,「Total number of reports」*

Command: #username,0000,17,60,3*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
17	Mode 17 defines the Geo-Fence Report Interval setup mode.
60	Time Interval (period) of Event Report. Ranges from 0 to 65000.
3	Times (frequency) of Event Reports that will be sent automatically.
*	End sign.

Table: Geo-Fence Interval Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>GF report setup,V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Geo-Fence Interval Setup Response Description

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Set up Backup/Log Mode

The device reports GPRMC data to the server/cell phone normally via GSM/GPRS mobile network.

When the GSM/GPRS is not in service or the GSM/GPRS signal is poor, the GPRMC data will not be able to report to the server.

User can use this command to define the historical GPRMC data will be ignored directly or saved to flash memory and send to the server when GSM/GPRS service is recovered.

Setup format：#「username」,「Password」,「Function mode」, 「Backup Mode」*

Command: #username,0000,21,1*

Text Keyed In SMS/COTA	Description	
#	Start sign.	
Username	Default ID of the device. If you have changed the user name, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
21	Mode 21 defines the historical data Backup mode.	
1	0	Disable Backup or Log function completely.
	1	Enable Backup function, the device will log the data when there is no GSM/GPRS reception.
*	End sign.	

Table: Backup Mode Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>LOG mode is disable, V3.793;56% <OK>LOG mode is backup mode, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Backup Mode Setup Response Description

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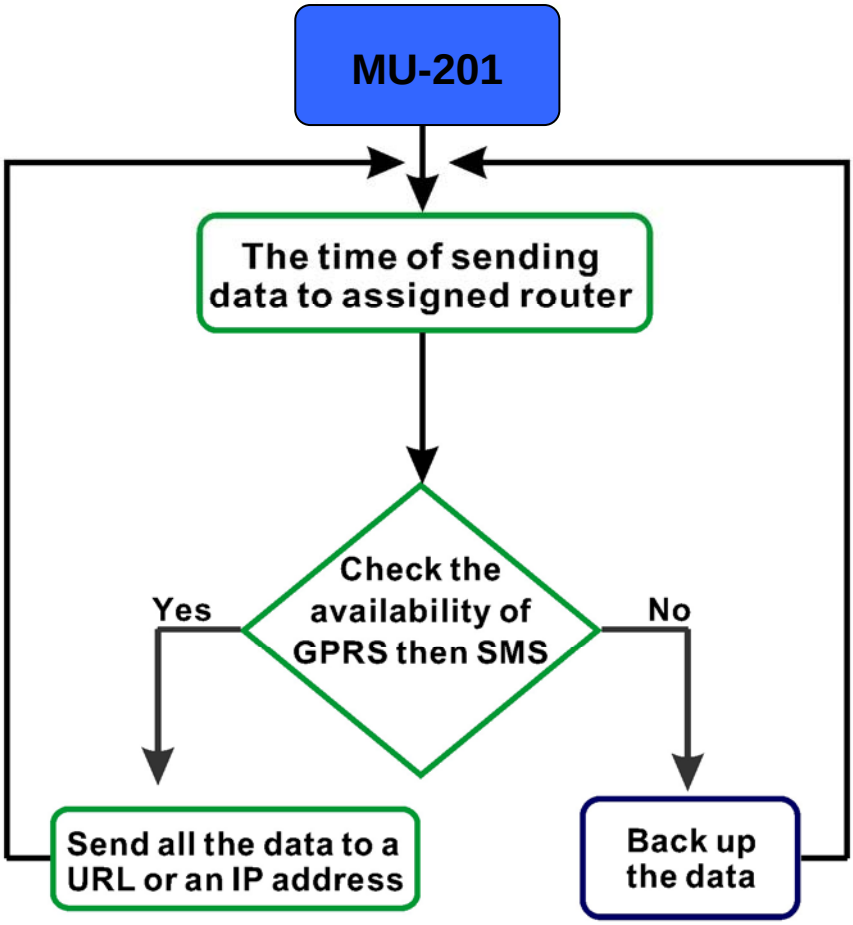
Operation logic Diagram of Backup Mode 1: #username,0000,21,1*


MU-201
The time of sending data to assigned router
Check the availability of GPRS then SMS
Yes
No
Send all the data to a URL or an IP address
Back up the data

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Erase the Backup Data

The device reports GPRMC data to the server/cell phone normally via GSM/GPRS mobile network.

When the GSM/GPRS is not in service or the GSM/GPRS signal strength is poor, the GPRMC data will not be able to report to the server. They will be saved to flash memory as backup and back to the server when GSM/GPRS service is recovered.

User can use this command to erase the logged (historical) GPRMC data stored at the flash memory of the device.

Setup Format: #「username」,「Password」,「Function Mode」*

Command: #username,0000,er*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
er	Mode "er" defines the Data Erase mode.
*	End sign.

Table: Erase the Logged Data Format Description

Situation	Message Reply
Setup Succeeds	<OK>Logged data is erased, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Erase the Logged Data Response Description

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Power Button

User can use the command to enable or disable power button function.

When the device is ON and power button is disabled, press power button will never turn OFF the device.

When the device is powered OFF due to low power, press power button can power ON the device when the device is charging.

Command: #powerkey,off*

SMS/ COTA Command	Description	
#	Start sign.	
powerkey	Mode "powerkey" defines the power button mode.	
off	on	Enable the power button, power ON/OFF is available (default)
	off	Disable the power button, press power button will be invalid
*	End sign.	

Table: Power Button Setup Description

Situation	Message Reply
Setup Succeeds	<OK>POWERKEY OFF,V4.124;100%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Power Button Setup Response Description

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Power Cord AUTO ON

User can use the command to power ON the device automatically without pressing Power Button when plugging into wall outlet.

Command: #autoon,on*

SMS/ COTA Command	Description	
#	Start sign.	
autoon	Mode "autoon" defines the Power ON via Power Cord mode.	
on	on	Enable the AUTO ON function.
	off	Disable the AUTO ON function.
*	End sign.	

Table: AUTO ON Setup Description

Situation	Message Reply
Setup Succeeds	<OK>AUTOON ON,V4.154;100%

Table: AUTO ON Setup Response Description

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Power OFF Message

User can use the command to have the device send Power OFF report when pressing power button to turn OFF the device. Therefore, the device will be turned OFF for a while (about 10 seconds) when pressing power button.

Command: #poweroffsend,on*

SMS/ COTA Command	Description	
#	Start sign.	
poweroffsend	Mode "poweroffsend" defines the Power OFF message mode.	
on	on	Enable the power off message function. Show report when turn off.
	off	Disable the power off message function.
*	End sign.	

Table: Power OFF Message Setup Description

Situation	Message Reply
Setup Succeeds	<OK>POWEROFFSEND ON,V4.169;100%

Table: Power OFF Message Setup Response Description

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Power ON/OFF Schedule

Use the command to set up the Power ON/OFF Schedule per day of the device.

User can set the device when will be turned ON and when will be OFF. There are totally 4 stages of a day can be scheduled.

The device still can be turned ON when the device is scheduled OFF.

Command: #username,0000,sp,disable* (to disable all the 4 stages of the schedule)

#username,0000,sp,enable* (to enable all the 4 stages of the schedule)

#username,0000,sp,on,0000,off,1200* (to turn on at 00:00 and turn off at 12:00)

#username,0000,sp,on,0030,off,0645,on,1200,dis,1830* (to turn on at 00:30, turn off at 6:45, turn on again at 12:00 and disable the last stage that should be turned off at 18:30)

SMS/ COTA Command	Description	
#	Start sign.	
Username	Default ID of MU-201. If you have changed the Username, please use the updated one.	
0000	Default password. If you have changed the password, please use the updated one.	
sp	Mode "sp" defines the Power Schedule mode.	
disable/ dis	disable	to disable all the 4 stages of schedule
	dis	To disable specified stage(s) of schedule
	enable	to enable all the 4 stages of schedule
on	on	to turn on the device automatically
	off	to turn off the device automatically
0000	The UTC time schedule to turn on or turn off the device	
*	End sign.	

Table: Power OFF Message Setup Description

Situation	Message Reply
Setup Succeeds 1	<OK>Schedule DisableSP State;1;DISABLE;ON,0030;2;DISABLE;OFF,0645;3;DISABLE;ON,1200;4;DISABLE;OFF,1830,V3.839;62%
Setup Succeeds 2	<OK>Schedule EnableSP State;1;ENABLE;ON,0030;2;ENABLE;OFF,0645;3;ENABLE;ON,1200;4;ENABLE;OFF,1830,V3.839;62%
Setup Succeeds 3	<OK>Schedule SetupSP State;1;ENABLE;ON,0030;2;ENABLE;OFF,0645;3;ENABLE;ON,1200;4;DISABLE;OFF,1830,V3.839;62%

Table: Power OFF Message Setup Description

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Request Battery Voltage

User can check the current battery voltage of the device by sending the following command:

Command: #battery*

Note: For the example from Message Reply, we found that there are 2 voltage measurements: 3.826V and 3.793V. The voltage shown will be different because 3.826V is "detected" voltage and 3.793V is instantaneous voltage when sending the message (the voltage will be dropped a little for a while when sending). So 3.826V will be more precise measurement.

SMS/ COTA Command	Description
#	Start sign.
battery	Mode "battery" defines Battery Check mode.
*	End sign

Table: Battery Voltage Check Format Description

Situation	Message Reply
Setup Succeeds	<OK>Vol=V3.826;ADC=688.500000, V3.793;56%

Table: Battery Voltage Check Response Description

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Voltage Percentage

The Voltage Percentage is a simple device remained battery gauge indicator.

The command is used to enable/disable voltage in percentage % display information at the last of GPRMC sentence.

Setup format：#「username」,「Password」, 「Function Mode」, 「on/off」*

Command: #username,0000,pv,on*

SMS/ COTA Command	Description	
#	Start sign.	
Username	✧ Default ID of MU-201. ✧ If you have changed the Username, please use the updated one.	
0000	✧ Default password. ✧ If you have changed the password, please use the updated one.	
pv	Mode "pv" defines Voltage Percentage ON/OFF mode.	
on	on	Enable voltage in percentage % display information
	off	Disable voltage in percentage % display information
*	End sign.	

Table: Voltage Percentage Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>PV ON,V3.891;70% **<OK>PV OFF,V3.891**
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V3.890;70%

Table: Voltage Percentage Setup Response Description

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Reset to Default Setting

Use this command to reset the device to default/factory setting. It will recover all the current parameters to default values includes username and password.

Setup Format: #「username」,「Password」,「Function Mode」*

Command: #username,0000,9*

SMS/ COTA Command	Description
#	Start sign.
username	Default ID of the device. If you have changed the user name, please use the updated one.
0000	Default password. If you have changed the password, please use the updated one.
9	Mode 9 defines the Default Setting setup mode.
*	End sign.

Table: Default Setting Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>Reset to default, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!,V4.091;98%

Table: Default Setting Setup Response Description

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Tail Report

The Tail Report function helps user get more information about tracker and environment status. The additional information includes RSSI, vibration sensor status, report number, charging status and the nearest GSM base transceiver station Cell ID information.

Command: #fic,tailon*

A standard GPRMC sentence for MU-201 is shown as the following:

imei=357566000009752&rmc=$GPRMC,073900.00,A,2457.81167,N,12125.53948,E,0.009,,180811,,,A*7E,AUTO, V3.793;56%

A GPRMC sentence with Tail Report is shown as the following:

imei=357566000009752&rmc=$GPRMC,073900.00,A,2457.81167,N,12125.53948,E,0.009,,180811,,,A*7E,AUTO, V3.793;56%,**R27,M1,I6745,C1,MCC466,MNC97,LAC51145,CID16012**

SMS/ COTA Command	Description
#	Start sign.
fic	Mode 'fic' defines Tail Report mode.
tailon / tailoff	To enable / disable Tail Report
*	End sign.

Table: Tail Report Setup Format Description

Situation	Message Reply
Setup Succeeds	<OK>FIC TAILON, V3.793;56%, **R27,M1,I6745,C1,MCC466,MNC97,LAC51145,CID16012**
	<OK>FIC TAILOFF, V3.793;56%
Emergency Mode	<FAIL>PANIC ON; Command not Allow!, V3.793;56%

Table: Tail Report Setup Response Description

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Note: A GSM Cell ID (CID) is a generally unique number used to identify each base transceiver station (BTS) or sector of a BTS within a Location area code (LAC) if not within a GSM network. Please refer to the following description for details in each item.

Tail Report Item	Description	
R27	RSSI. The Received Signal Strength Indication of GSM network. Ranges from R0 to R31. R99 means service unavailable.	
M1	Vibration Status (Move/Stop State):	
	M	Vibration Sensor OFF (VS Off)
	M0	Vibration Sensor ON, stop state (device not vibrating)
	M1	Vibration Sensor ON, move state (device vibrating)
I6745	This is a unique code for each report. This number will be accumulated and can't be set zero.	
C1	Charging Status:	
	C0	Device is not being charged.
	C1	Device is charging.
MCC466	Mobile Country Code. MCC is defined in ITU-T E.212 for use in identifying mobile stations in GSM networks of which country.	
MNC97	Mobile Network Code. MNC is used in combination with MCC to uniquely identify a mobile phone operator/carrier using the GSM networks and some satellite mobile networks.	
LAC51145	Location Area Code. A "location area" is a set of base stations that are grouped together to optimize signaling. Typically, tens or even hundreds of base stations share a single Base Station Controller (BSC) in GSM, the intelligence behind the base stations. To each location area, a unique number called a "location area code" is assigned. The location area code is broadcast by each base station, known as a "base transceiver station" BTS in GSM at regular intervals.	
CID16012	Cell Identity. For BTS identification.	

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Appendix 1: Tracker Event List

This table shows the different events/ messages sent from the device.

Basically, there are more than 10 different situations that trigger the device to respond its position and tracker status messages as the following.

Note: Any event marks with letter "**B**" represents data which was not able to send to assigned route immediately due to priority or mobile network service issue. The data will be sent after the issues are cleared.

Event	Description
AUTO / BAUTO	When the device is set to report to assigned route in a given period of time, it will send a report automatically with an **AUTO** message. When any other event is triggered and the priority is greater than AUTO, the AUTO report will be saved to flash and report to assigned route later.
AGF / BAGF	**NOTE: When the device AUTO report "Distance" interval or "Stationary Detection" is set, the tracker status (event) will be "AGF" instead of "AUTO".**
PARK / BPARK	When the park function is activated, the server will receive a RMC sentence. This sentence is ended by **PARK is ON now!** This indicates that the PARK detection is started. When park function is deactivated, the server will receive a RMC sentence which is ended by **Park is OFF now!**
MOVE / BMOVE	When the device exceeds the movement threshold in Park/ Vibration detection mode, it will trigger the **MOVE** event according to the setting.
POLL / BPOLL	When sending polling command to poll the report, it triggers the **POLL** event.
GFIN / BGFIN	When entering the Geo-Fence restricted area, it triggers the **GFIN,(1~10)** event.
GOUT / BGOUT	When leaving the Geo-Fence curfew area, it triggers the **GOUT,(1~10)** event.
Overspeed / BOverspeed	When the device exceeds the speed limit threshold, it triggers the **Over Speed** Event.
SOS / BSOS	When the SOS (Panic) function is activated, it triggers the **SOS** Event.
LP	When the device is in 1st low power (under 3.700V) status, it triggers the **LP** Event.
BATTERY LOW	When the device is in 2nd low power (under 3.400V) status, it triggers the event **BATTERY LOW TO SHUTDOWN**.

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Appendix 2: GPRMC Data Output Format

GPRMC Data Output Format_ HTTP, TCP/IP or UDP/IP

1. Upload the data when GPS is fixed

When execute the Auto Report according to the settings with a GPS fixed, MU-201 will upload the data to HTTP or TCP or UDP. The data format will be like the following.

Format:

IMEI=IMEI Number&rmc=$GPRMC,<UTC Time>,<FixStatus>,<Latitude>,<Longitude>,<Speed>,<Direction>,<Date>,<Checksum>,<Tracker Event>,<Battery Voltage>,<Battery Voltage %>

Example:

IMEI=135790246811220&rmc=$GPRMC,031516.00,A,2457.81067,N,12125.53896,E,0.216,274.31,140211,,,A*67,AUTO,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,032903.00,A,2457.81147,N,12125.53901,E,0.018,,140211,,,A*71,POLL,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,032210.00,A,2457.81085,N,12125.53833,E,0.359,201.82,140211,,,A*66,AGF,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033334.00,A,2457.81122,N,12125.53836,E,0.341,10.26,140211,,,A*5C,MOVE,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033624.00,A,2457.81222,N,12125.53939,E,0.039,,140211,,,A*72,PARK is ON now!,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033725.00,A,2457.81143,N,12125.53902,E,0.183,,140211,,,A*7E,PARK is OFF now! ,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,034429.00,A,2457.81213,N,12125.53903,E,0.189,,140211,,,A*7B,SOS,3.934V,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,165724.00,A,2459.57367,N,12126.02097,E,0.671,182.53,180211,,,A*6B,AUTO,3.793;56% (LP)

IMEI=135790246811220&rmc=$GPRMC,172827.00,A,2459.56287,N,12126.03198,E,0.733,342.42,180211,,,A*69, ,3.793;56% (LP),Device BATTERY LOW!!!

IMEI=555444333222111&rmc=$GPRMC,030930.00,A,2457.81198,N,12125.53663,E,0.161,,210211,,,A*73,GFIN,1, ,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,105735.00,A,2459.34799,N,12125.92549,E,5.747,34.34,180211,,,A*5D,GOUT,2, ,3.793;56%

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2. Upload the data when GPS is not fixed

Example:

IMEI=135790246811220&rmc=$GPRMC,031516.00,V,2457.81067,N,12125.53896,E,0.216,274.31,140211,,,A*67,AUTO,3.978V

IMEI=135790246811220&rmc=$GPRMC,032903.00,V,2457.81147,N,12125.53901,E,0.018,,140211,,,A*71,POLL,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,032210.00,V,2457.81085,N,12125.53833,E,0.359,201.82,140211,,,A*66,AGF,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033334.00,V,2457.81122,N,12125.53836,E,0.341,10.26,140211,,,A*5C,MOVE,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033624.00,V,2457.81222,N,12125.53939,E,0.039,,140211,,,A*72,PARK is ON now!,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,033725.00,V,2457.81143,N,12125.53902,E,0.183,,140211,,,A*7E,PARK is OFF now!,3.793;56%

IMEI=135790246811220&rmc=$GPRMC,034429.00,V,2457.81213,N,12125.53903,E,0.189,,140211,,,A*7B,SOS,3.793V;56%

IMEI=135790246811220&rmc=$GPRMC,165724.00,V,2459.57367,N,12126.02097,E,0.671,182.53,180211,,A*6B,AUTO,3.676V;56%(LP)

IMEI=135790246811220&rmc=$GPRMC,172827.00,V,2459.56287,N,12126.03198,E,0.733,342.42,180211,,,A*69,3.793V;56% (LP),Device BATTERY LOW!!!

IMEI=555444333222111&rmc=$GPRMC,030930.00,V,2457.81198,N,12125.53663,E,0.161,,210211,,,A*73,GFIN,1,3.793V;56%

IMEI=135790246811220&rmc=$GPRMC,105735.00,V,2459.34799,N,12125.92549,E,5.747,34.34,180211,,,A*5D,GOUT,2, 3.793V;56%

Note: The **"A"** is the GPRMC sentence indicates the GPS status, which is GPS fixed. If the GPS is not fixed, letter **"V"** will substitute the letter "A".

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GPRMC Data Output Format_ SMS

1. Upload the data when GPS is fixed

When execute the Auto Report according to the settings with a GPS fixed, MU-201 will upload the data to SMS. The data format will be like the following.

Format:

username,$GPRMC,<UTC Time>,<Fix Status>,<Latitude>,<Longitude>,<Speed>,<Direction>,<Date>,
<Checksum>,<Tracker Event>,<Battery Voltage>,<Battery Voltage %>

Example:

username,$GPRMC,031516.00,A,2457.81067,N,12125.53896,E,0.216,274.31,140211,,,A*67,AUTO,3.793;56%

username,$GPRMC,032903.00,A,2457.81147,N,12125.53901,E,0.018,,140211,,,A*71,POLL,3.793;56%

username,$GPRMC,032210.00,A,2457.81085,N,12125.53833,E,0.359,201.82,140211,,,A*66,AGF,3.793;56%

username,$GPRMC,033334.00,A,2457.81122,N,12125.53836,E,0.341,10.26,140211,,,A*5C,MOVE,3.793;56%

username,$GPRMC,033624.00,A,2457.81222,N,12125.53939,E,0.039,,140211,,,A*72,PARK is ON now!,3.793;56%

username,$GPRMC,033725.00,A,2457.81143,N,12125.53902,E,0.183,,140211,,,A*7E,PARK is OFF now!,3.793;56%

username,$GPRMC,034429.00,A,2457.81213,N,12125.53903,E,0.189,,140211,,,A*7B,SOS,3.934V,3.793;56%

username,$GPRMC,165724.00,A,2459.57367,N,12126.02097,E,0.671,182.53,180211,,,A*6B,AUTO,3.793;56% (LP)

username,$GPRMC,172827.00,A,2459.56287,N,12126.03198,E,0.733,342.42,180211,,,A*69, ,3.793;56% (LP),Device BATTERY LOW!!!

username,$GPRMC,030930.00,A,2457.81198,N,12125.53663,E,0.161,,210211,,,A*73,GFIN,1, ,3.793;56%

username,$GPRMC,105735.00,A,2459.34799,N,12125.92549,E,5.747,34.34,180211,,,A*5D,GOUT,2, ,3.793;56%

2. Uploading the data when GPS is not fixed

Example:

username,$GPRMC,031516.00,V,2457.81067,N,12125.53896,E,0.216,274.31,140211,,,A*67,AUTO,3.793;56%

username,$GPRMC,032903.00,V,2457.81147,N,12125.53901,E,0.018,,140211,,,A*71,POLL,3.793;56%

username,$GPRMC,032210.00,V,2457.81085,N,12125.53833,E,0.359,201.82,140211,,,A*66,AGF,3.793;56%

username,$GPRMC,033334.00,V,2457.81122,N,12125.53836,E,0.341,10.26,140211,,,A*5C,MOVE,3.793;56%

username,$GPRMC,033624.00,V,2457.81222,N,12125.53939,E,0.039,,140211,,,A*72,PARK is ON now!,3.793;56%

username,$GPRMC,033725.00,V,2457.81143,N,12125.53902,E,0.183,,140211,,,A*7E,PARK is OFF now!,3.793;56%

username,$GPRMC,034429.00,V,2457.81213,N,12125.53903,E,0.189,,140211,,,A*7B,SOS, ,3.793;56%

username,$GPRMC,165724.00,V,2459.57367,N,12126.02097,E,0.671,182.53,180211,,,A*6B,AUTO, ,3.793;56% (LP)

username,$GPRMC,172827.00,V,2459.56287,N,12126.03198,E,0.733,342.42,180211,,,A*69, ,3.793;56% (LP),Device BATTERY LOW!!!

username,$GPRMC,030930.00,V,2457.81198,N,12125.53663,E,0.161,,210211,,,A*73,GFIN,1, ,3.793;56%

username,$GPRMC,105735.00,V,2459.34799,N,12125.92549,E,5.747,34.34,180211,,,A*5D,GOUT,2, ,3.793;56%

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Appendix 3: NMEA 0183 GPRMC Data Format

RMC - Recommended Minimum data.

The Recommended Minimum data format is defined by NMEA (National Marine Electronics Association) for GPS system data transmission.

Format:

$GPRMC,Time,(A/V),Latitude,(South/North),Longitude,(East/West),Ground Speed,Direction,Date,,,A*CS<CR><LF>

Example:

$GPRMC,110214.00,A,2457.81039,N,12125.54004,E,0.634,287.73,210111,,,A*62

Name	Format	Example	Unit	Description
$GPRMC	string	$GPRMC		RMC protocol header
Time	hhmmss.ss	110214.00	UTC Time	Time of position fix in hours, minutes, seconds UTC
Status	Capital letter	A		Navigation receiver warning status
				V = Navigation receiver warning (maybe invalid)
				A = Data valid (OK)
Latitude	ddmm.mmmmm	2457.81039		User datum latitude in degrees, minutes and thousandths of minutes
South/ North	Capital letter	N		N= North latitude S= South latitude
Longitude	dddmm.mmmmm	12125.54004		User datum longitude in degrees, minutes and thousandths of minutes
East/ West	Capital letter	E		E= East longitude W= West longitude
Ground Speed	numeric	0.634	knot	Speed over ground in nautical miles per hour
Direction	numeric	287.73	degree	Course over ground, degrees true
Date	ddmmyy	210111		Current Date in Date, Month and Year format:
,,,	N/A	N/A		Null field
Mode Indicator		A		A=Autonomous D=Differential
CS	hexadecimal	*62		Mandatory checksum. 8 bit exclusive OR of all data in the sentence, including comma ",", between but not including the "$" and "*" delimiters
<CR><LF>				End of message

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FAQ

Can't turn ON the device	Make sure if the device is fully charged.
	Check if the Power button is stuck.
	Check if the Power Button is disabled.
Can't fix GPS signal	Check if GSM LED flashes every 5 seconds (Green)
	Check if you have disable SIM Card PIN code
	Make sure you have inserted SIM card BEFORE turn on the device.
	Check if SIM Card is inserted in the correct direction.
	Check if your SIM Card supports 2G/2.5G network (Some 3G SIM card is not backward compatible.)
	Please make sure there is valid GSM signal in your testing environment.
Can't fix GPS signal	Check if GPS LED flashes every 5 seconds (Blue)
	Make sure there is valid GPS signal in your testing environment. (Open sky)
Can't receive any data on the server or cell phone.	Make sure you have activated GPRS feature in SIM Card.
	Check with your GSM carrier if you have the correct APN setting.
	Please save your complete setting and send it to SANAV for further support. User can save the setting using GPS Tracker Utility.
Can't charge the device.	Check if the Blue/Green LED works Flash/1s.
	Check if you have used the correct cable for charging (not the USB Data Cable).
	Check if the LED light on the Charger is steady ON.
	Check if the USB connection is solid between Power Cord and the AC Adapter.

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Warranty Regulation

Warranty Time Period and Repair Coverage

SAN JOSE TECHNOLOGY, INC. warrants MU-201 to be free from all defects and malfunctions in materials and workmanship for a period of 12 months from the original purchase date from SAN JOSE Technology or authorized dealers. If the equipment functions improperly during the warranty period, SAN JOSE Technology will either repair or replace the unit without charge. Such repair service will include necessary adjustments, remanufacture, and replacements. The product should be returned freight-prepaid by the purchaser within valid warranty period. **Notice that you must contact SAN JOSE Technology for a RMA (Return Material Authorization) number before returning the goods for repair**.

Telephone assistance will also be provided during the warranty period.

Limitations

This warranty is limited only to the repair or replacement of defective parts confirmed by SAN JOSE Technology to be a result of faulty materials or workmanship. Instruments mechanically or physically damaged due to the following conditions are beyond our warranty:

Neglect, misuse or abuse, such as a incorrect testing, installation, or operation.

Place subject in extreme environments beyond the limits of the specifications.

Subjected to disassembling, soldering, alteration, unauthorized repair, and electrical shock by nature.

Any incidental or consequential losses or damages result from the purchase.

Disaster, accident, using any unauthentic substitutive equipment or loss of any accessory that's not provided by SAN JOSE Technology.

For damages caused under the above conditions, we'll contact you to discuss replacement options.

This device complies with Part 15 of the FCC Rules. Operations is subject to the following two Conditions:

(1) This device may not cause harmful interference and

(2) This device must accept any interference received, including interference that may cause undesired operation.

SAN JOSE TECHNOLOGY, INC.

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